

High Speed Rail (West Midlands - Crewe)

Environmental Statement

Volume 5: Technical appendices

CA3: Stone and Swynnerton

Agriculture, forestry and soils data (AG-001-003)



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Department for Transport

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1 Introduction

- 1.1.1 This document is the agriculture, forestry and soils assessment Appendix for the Stone and Swynnerton community area (CA3), and comprises:
- soils and agricultural land classification surveys (Section 2);
 - forestry (Section 3); and
 - farm impact assessment summaries (Section 4).
- 1.1.2 Maps referred to throughout this agriculture, forestry and soils Appendix are contained in the Volume 5, Agriculture, Forestry and Soils Map Book.

2 Soils and agricultural land classification surveys

2.1 Background

- 2.1.1 The soils and agricultural baseline conditions reported have been established from desktop studies and site surveys.
- 2.1.2 Information gathered by desktop studies has related primarily to the identification of soil resources in the study area, the associated physical characteristics of geology, topography and climate which underpin the assessment of agricultural land quality, and the disposition of land uses. The main sources of information have included:
- National Soil Map;¹
 - Soils and Their Use in Midland and Western England;²
 - solid and superficial deposits from the British Geological Survey (BGS);³
 - Gridpoint meteorological data for Agricultural Land Classification of England and Wales;⁴
 - Provisional Agricultural Land Classification of England and Wales (1:250,000);⁵
 - Likelihood of Best and Most Versatile Agricultural Land (1:250,000);⁶
 - agri-environment schemes;⁷
 - aerial photography from Google Earth; and
 - on-site soil and Agricultural Land Classification surveys.
- 2.1.3 Information gathered by field survey has related to the enhancement of desk-based information on soils and agricultural land quality, and the engagement with landowners and tenants to establish the nature and extent of agricultural, forestry and related rural enterprises.
- 2.1.4 Where the collection of agricultural site information has enabled a review/refinement of published information, this was undertaken in accordance the methodology prescribed by Ministry of Agriculture, Fisheries and Food (MAFF)⁸.
- 2.1.5 Information obtained from farm impact assessment interview surveys has been taken as a factual representation of local agricultural and forestry interests and has not been subject to further verification.

¹ Cranfield University (2001), *The National Soil Map of England and Wales 1:250,000 scale*. Cranfield University: National Soil Resources Institute

² Soil Survey of England and Wales (1984), *Soils and Their Use in Midland and Western England*. Harpenden

³ British Geological Survey (2017), Geology of Britain viewer. www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html

⁴ Meteorological Office (1989), *Grid point Meteorological data for Agricultural Land Classification of England and Wales and other Climatological Investigations*

⁵ Ministry of Agriculture, Fisheries and Food (1983), *Agricultural Land Classification of England and Wales (1:250,000)*

⁶ Department for Environment, Food and Rural Affairs (2005), *Likelihood of Best and Most Versatile Agricultural Land (1:250,000)*

⁷ Multi-Agency Geographical Information for the Countryside (MAGIC). www.magic.gov.uk

⁸ Ministry of Agriculture, Fisheries and Food (1988), *Agricultural Land Classification of England and Wales – Revised guidelines and criteria for grading the quality of agricultural land*

2.2 Soils and land resources

- 2.2.1 This part of the technical appendix describes the findings of a desktop study and targeted soil surveys and Agricultural Land Classification (ALC) surveys that identified existing soil and agricultural land resources in the study area.
- 2.2.2 The location and extent of different soil types and agricultural land in the different ALC grades are influenced by topography and drainage, and by geology and soil parent materials, which are described in turn in the following sections. This section then provides a description and distribution of the main soil types encountered within the study area.

2.3 Topography and drainage

- 2.3.1 Topography of the area has been influenced by the actions of glaciers on the underlying mudstone and sandstone. The landform is broadly dominated by series of rounded hill tops and ridges, with irregular, shallow to moderate slopes. The highest altitude is around 200m above Ordnance Datum (AOD) across a sandstone plateau at Knowl Wall. The lowest altitudes coincide with the River Trent and the Filly Brook, at 85m and 95m AOD respectively.
- 2.3.2 Drainage of the land is via three significant water courses. In the south, the land drains eastward toward the River Trent which is aligned roughly north-south in the vicinity of Stone. To the east of Yarnfield, drainage to the Trent is via a shallow valley containing the Filly Brook. North of Swynnerton, the land drains westward and is facilitated by the Meece Brook which runs throughout the length of the area. The source of the Meece Brook is to the south-west of Whitmore from where it drains southward until reaching a confluence with the River Sow.

2.4 Geology and soil parent materials

- 2.4.1 In the south of the area the route passes through early-Triassic mudstones. To the south-east of Swynnerton, the mudstone borders early to middle Triassic age interbedded siltstones, mudstones and sandstones of the Tarporley Siltstone Formation and gravelly sandstone of the Helsby Sandstone Formation.
- 2.4.2 Further north in the area, the bedrock comprises Triassic sandstones of the Sherwood Sandstone Group, including the Wildmoor and Kidderminster Sandstone Formations.
- 2.4.3 A list of geological strata occurring within the study area is provided in age order in Table 1 and shown on Map WR-02-203 (Volume 5, Water Resources and Flood Risk Map Book).

Table 1: Bedrock and soil forming materials

Formation	Composition/soil parent material
Wildmoor Sandstone	Fine- to medium-grained sandstone.
Kidderminster	Sandstones and pebble conglomerates.
Helsby	Sandstones, commonly pebbly or conglomeratic, interbedded with siltstone and mudstone.
Tarporley	Interlaminated siltstone, mudstone and sandstone.

Formation	Composition/soil parent material
Mercia Mudstone Group	Mudstones and subordinate siltstone with thick halite-bearing units.

2.4.4 The Proposed Scheme passes through the following superficial deposits:

- glacial till, to the north of Yarlet, at Aston-by-Stone, north of Swynnerton and west of Beech, comprising poorly sorted material ranging in size from boulders to clay;
- glaciofluvial sheet deposits to the south of Swynnerton, comprising sand and gravel;
- glacial head to the north of Swynnerton, comprising sand and gravel;
- alluvium, associated with the Filly Brook and Meece Brook and including consolidated silty clay with sand, peat and gravel; and
- Quaternary alluvial fan deposits, mapped across relatively steep slopes at Stableford and comprising sand and gravel.

2.5 Description and distribution of soil types

2.5.1 The characteristics of the soils are described by the Soil Survey of England and Wales bulletin that accompanies the National Soil Map. The soils are grouped into soil associations of a range of soil types (soil series) and are summarised in Table 2 and their distribution is shown on Map AG-02-103 (Volume 5, Agriculture, Forestry and Soils Map Book).

Table 2: Soil associations

Soil association ⁹ : code shown on map AG-02-103	Soil association: name	Description	Wetness class ¹⁰
431	Worcester	Slowly permeable, non-calcareous and calcareous reddish clayey soils over mudstone with slight to moderate seasonal waterlogging; some similar non-calcareous clay loam over clayey soils.	II-III
541r	Wick 1	Deep well drained sandy loam and sandy soils, locally over gravel; some similar soils affected by groundwater.	I-II
551a	Bridgnorth	Well drained reddish brown loamy sand over sand, with sandstone at moderate depth.	I
572f	Whimple 3	Reddish clay loam and silty clay loam over clayey soils with slowly permeable subsoils and slight seasonal waterlogging; some similar clayey soils on brows; slowly permeable seasonally waterlogged clay loam over clayey soils on lower slopes.	II-III

⁹ Cranfield University (2017), *The Soils Guide*, www.landis.org.uk

¹⁰ The Wetness Class (WC) of a soil is classified according to the depth and duration of waterlogging in the soil profile and has six categories from WC I which is well drained to WC VI which is very poorly drained

Appendix AG-001-003

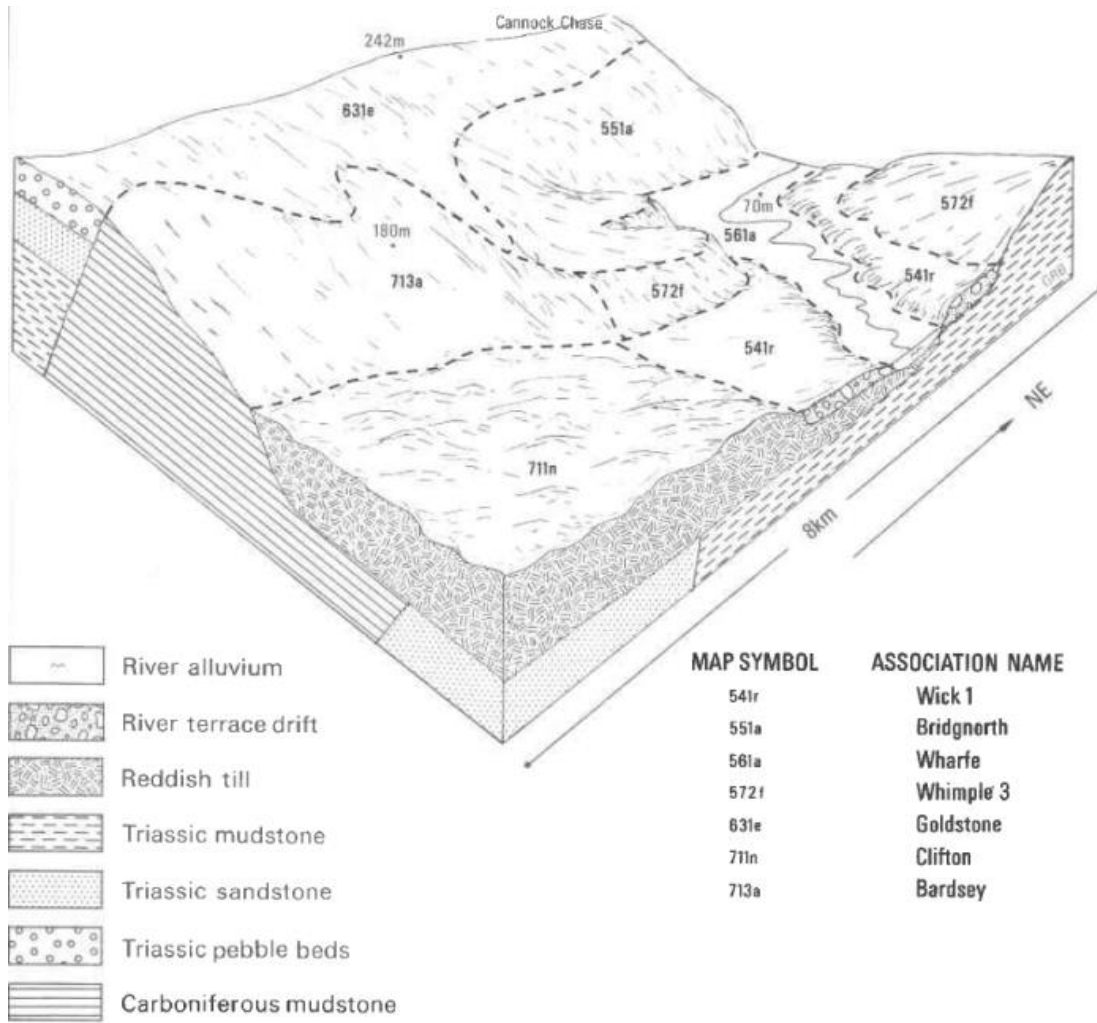
Soil association ⁹ : code shown on map AG-02-103	Soil association: name	Description	Wetness class ¹⁰
631b	Delamere	Well drained sandy soils over sandstone. Very acid where uncultivated.	I
711n	Clifton	Slowly permeable, seasonally waterlogged clay loam and sandy clay loam.	IV
811a	Enborne	Deep stoneless fine loamy and clayey soils variably affected by groundwater.	III-IV
831c	Wigton Moor	Permeable fine and coarse loamy soils, variably affected by groundwater and commonly seasonally waterlogged.	III

2.5.2 The National Soil Map shows the following eight soil associations in the study area:

- Worcester association soils are present to the south-west of Aston-by-Stone and are characterised by clay loam or clay topsoils over silty clay or clay subsoil layers. These soils are developed over mudstone;
- also around Aston-by-Stone is the Clifton association, developed in reddish till. The soils are mostly of clay loam or sandy clay loam and are seasonally waterlogged;
- Whimple 3 soils, developed in thin drift over mudstone. Whimple 3 soils consist of reddish loams over slowly permeable clayey lower subsoils, with slight to moderate seasonal waterlogging;
- Wigton Moor soils are mapped in conjunction with the Meece Brook and a small water course north of Yarnfield. Soil profiles are characterised by sandy clay loam or clay loam textures and are seasonally waterlogged;
- the Wick 1 association is mapped to the north of Swynnerton, comprising sandy loams and sands which are mostly well drained and locally develop over gravel;
- extending from Swynnerton, northwards, are soils of the Bridgnorth association comprising well drained loamy sand over sands and sandstone;
- the Delamere association is mapped at Swynnerton Old Park and is characterised by humose loamy sands over sand and sandstone at moderate depth. The soils are acidic and predominantly under woodland; and
- the Enborne association, comprising profiles of clay loam, develops in alluvium and is associated with Meece Brook.

2.5.3 Soils of the Wick 1, Bridgnorth, Whimple 3, Goldstone and Clifton associations⁹ are shown in a landscape context in Figure 1.

Figure 1: Wick 1, Bridgnorth, Whimble 3, Goldstone and Clifton soil associations in a landscape context⁹



2.5.4 Detailed descriptions are available for the predominant soil series of the Clifton and Wigton Moor associations, and are given Table 3.

Appendix AG-001-003

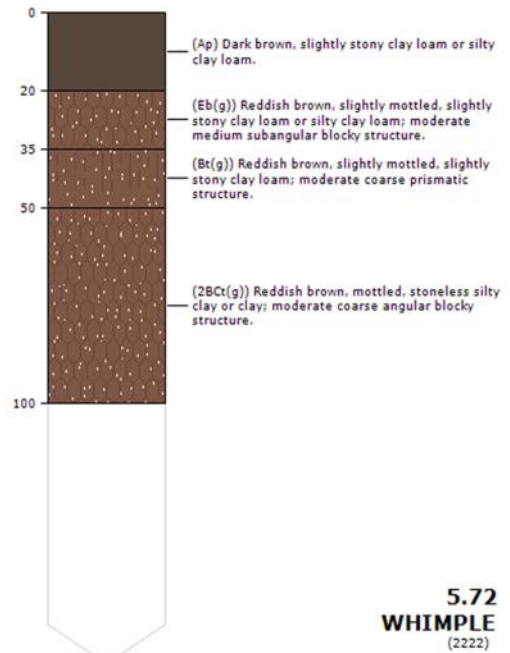
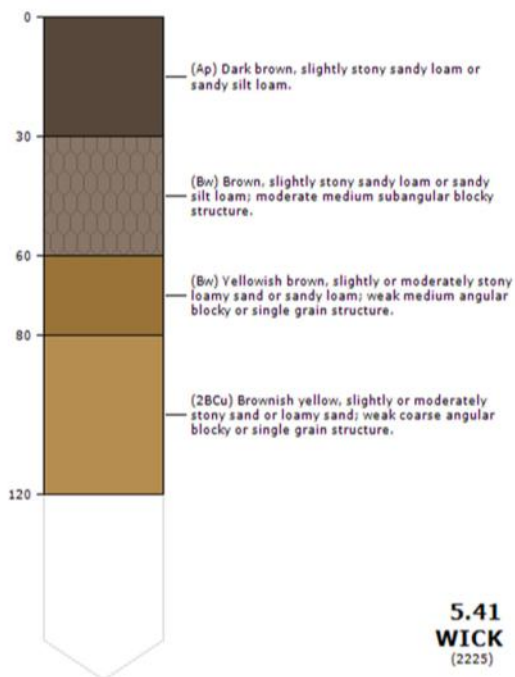
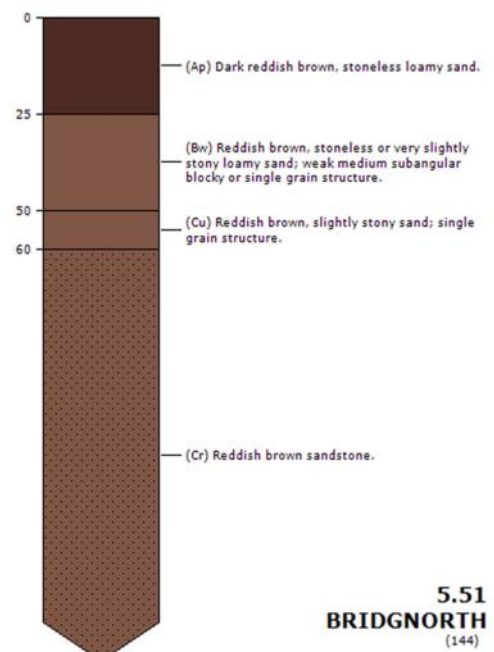
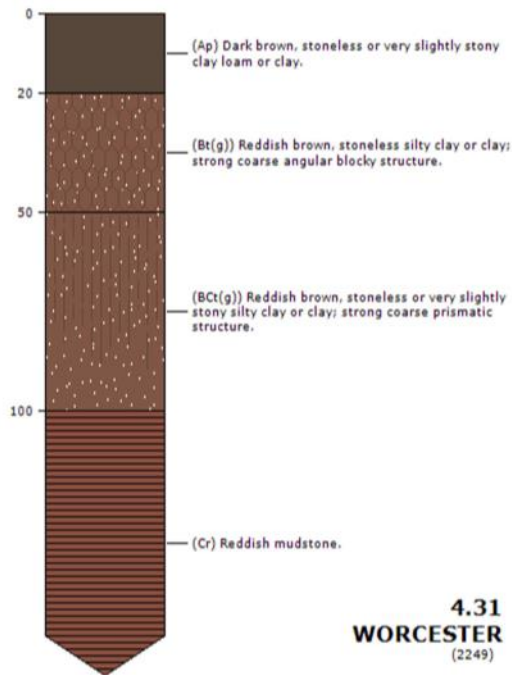
Table 3: Dominant soil series

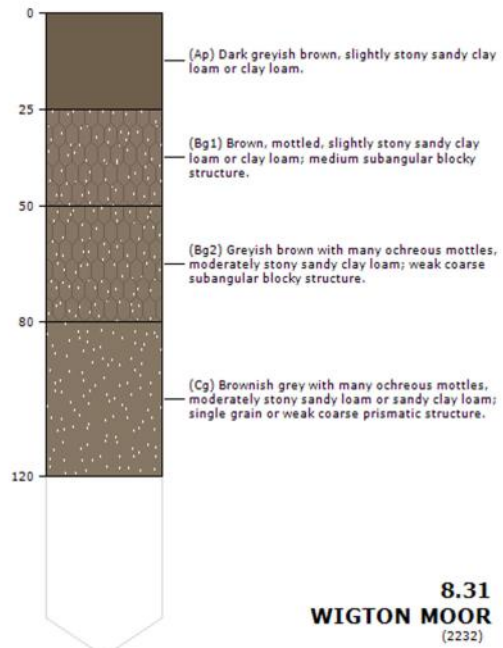
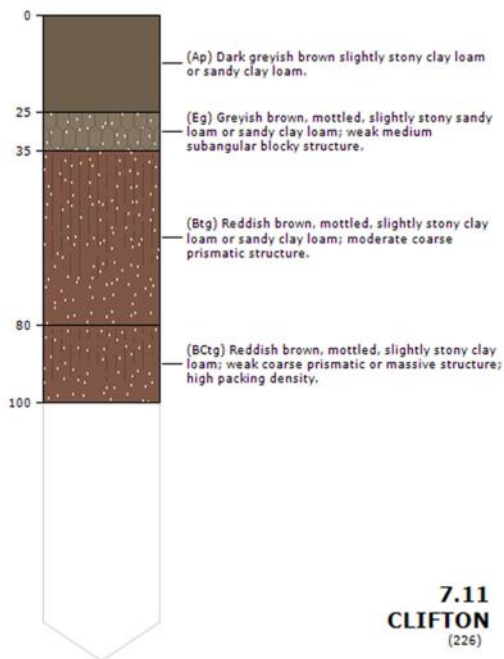
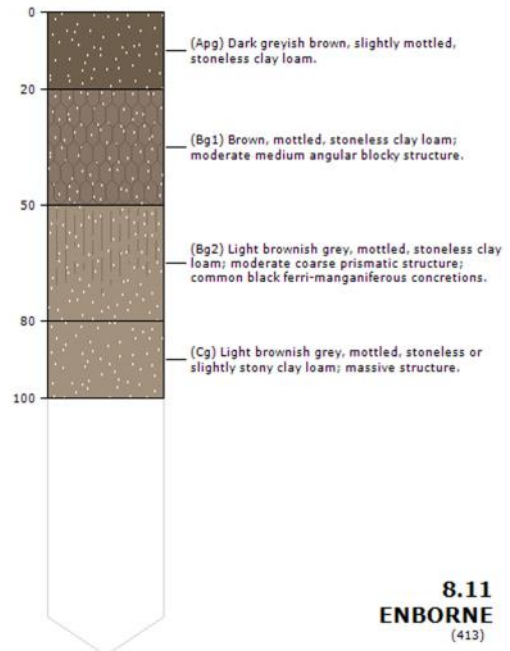
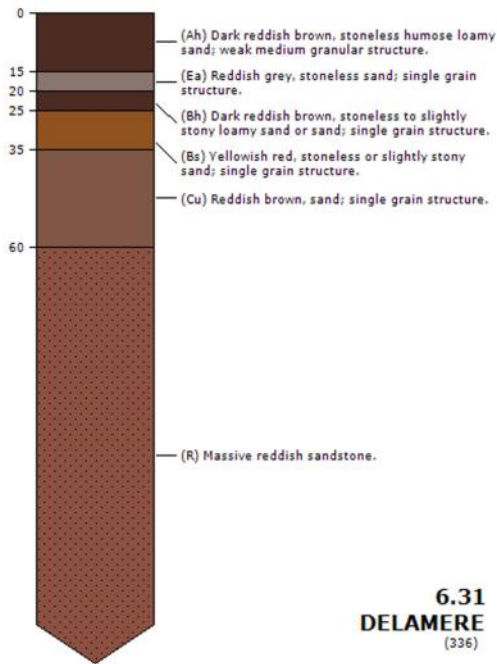
Clifton series	
0 – 23cm,	Dark greyish brown (10YR4/2 ¹¹) slightly stony sandy clay loam; large rounded, quartzite; moist; strongly developed coarse subangular blocky; high packing density; moderately firm soil and ped strength; many fine fibrous roots; non-calcareous; sharp wavy boundary.
23 - 37cm,	Light grey to grey (10YR6/1) slightly stony sandy loam with many fine yellowish brown (10YR5/6) mottles; large rounded, quartzite; moist; weakly developed, adherent medium subangular blocky; high packing density; moderately firm soil and ped strength; common very fine fibrous roots; non-calcareous; few irregular ferri-manganiferous nodules; abrupt way boundary.
37 - 86cm,	Reddish brown (5YR4/4) slightly stony clay loam with common fine light grey to grey (10YR6/1) and strong brown (7.5YR5/6) mottles; large rounded quartzite; moist; strongly developed very coarse prismatic with greyish brown (10YR5/2) faces; high packing density; very firm soil strength; few very fine fibrous roots; non-calcareous; many clay coats; gradual smooth boundary.
86 - 107cm,	Reddish brown (2.5YR4/4) slightly stony clay loam with common medium grey (N5/0) mottles; medium rounded, quartzite; moist; massive; high packing density; moderately strong ped strength; common clay coats
Wigton Moor series	
0 - 30cm,	Very dark greyish brown (10YR3/2) slightly stony clay loam; small stones; moist; moderately developed medium subangular blocky with very dark grey (10YR3/1) faces; high packing density; moderately firm soil strength; abundant fine fibrous roots; non-calcareous; abrupt irregular boundary.
30 - 53cm,	Strong brown (7.5YR5/6) slightly stony clay loam with many extremely fine brown (10YR5/3) mottles; very small stones; moist; coarse subangular blocky with dark greyish brown (10YR4/2) faces; high packing density; moderately strong soil strength; common fine fibrous roots; non-calcareous; few ferri-manganiferous nodules; clear irregular boundary.
53 - 70cm,	Dark grey (N4/0) slightly stony clay loam with common very fine strong brown (7.5YR5/6) mottles; moist; coarse subangular blocky with dark greyish brown (10YR4/2) ped faces; high packing density; moderately strong soil strength; common fine fibrous roots; non-calcareous; few ferri-manganiferous nodules; clear irregular boundary.
70 -120cm,	Brown to dark brown (7.5YR4/4) slightly stony sandy clay loam with common very fine yellowish red (5YR5/6) mottles; very small stones; moist; weakly developed very coarse prismatic with brown to dark brown (7.5YR4/2) ped faces; high packing density; moderately firm soil strength; common fine fibrous roots; non-calcareous; few ferri-manganiferous nodules.

2.5.5 Typical soil profiles of the main series of each association⁹ are depicted and described in Figure 2.

¹¹ Notations according to the Munsell Soil Color Book (2009). In this example, 10YR is the hue; 4/2 is the value/chroma

Figure 2: Predominant soil series profile descriptions





2.6 Soil and land use interactions

Agricultural land quality

- 2.6.1 A review of available ALC information has been undertaken to establish the agricultural land quality within the study area. The review sought to identify the extent of any existing, detailed post-1988 ALC information to ensure that surveys are not repeated unnecessarily. Detailed ALC survey data is available for land at Aston-by-Stone, land east of Yarnfield and land west of Beech.
- 2.6.2 The assessment has been supplemented using archived Soil Survey records obtained from the National Soil Resources Institute (NSRI) at Cranfield University and with detailed soil surveys undertaken specifically for the purpose of this assessment.

Detailed agricultural land classification

- 2.6.3 Archived auger bores from the NSRI were obtained and used for reference in this ALC assessment. Additional field surveys were undertaken at Swynnerton.
- 2.6.4 The principal physical factors influencing agricultural production and land quality in this study area are climate, site and soil and the interactions between them. Soil wetness and workability and gradient of slope are particularly relevant limitations in this area.
- 2.6.5 During the detailed soil survey, soil profiles were examined using an Edelman (Dutch) auger and a spade. At each observation point the following characteristics were assessed for each soil horizon up to a maximum of 120cm where possible, or to any impenetrable layer:
- soil texture;
 - significant stoniness;
 - colour (including local gley and mottle colours);
 - consistency;
 - structural condition;
 - free carbonate; and
 - depth.
- 2.6.6 Soil Wetness Class (WC) was inferred from the matrix colour, presence or absence of, and depth to, greyish and ochreous gley mottling and/or poorly permeable subsoil layers at least 15cm thick. Soil available water capacity, relevant to the assessment of drought risk, was estimated from texture, structure, organic matter content, stone content and profile depth.

Agro-climatic limitations

- 2.6.7 The local agro-climatic factors have been interpolated from the Meteorological Office's standard 5km grid point dataset at three points within the study area, as set out in Table 4. There is some variation across the study area. Average annual rainfall is from 749 to 794mm. Median Field Capacity Days (FCDs) are from 184 to 192 days. Moisture deficits are 83–88mm for wheat and 67-74mm for potatoes, with the highest values occurring on the lowest ground.

Table 4: Interpolated agro-climatic data

Agro-climatic parameter	SJ895315 Stone	SJ864354 Swynnerton	SJ830383 Stableford
Altitude (AOD)	130m	150m	135m
Average annual rainfall	749mm	783mm	794mm
Accumulated temperature >0°C ²²	1,325 day°	1,301 day°	1,317 day°
Field capacity days (FCD)	184 days	191 days	192 days
Average moisture deficit, wheat	88mm	84mm	83mm
Average moisture deficit, potatoes	74mm	69mm	67mm

- 2.6.8 Climate has an overriding limitation to Grade 2 at all of the points assessed, though there may be other areas in which it does not represent a limitation. The interactions of climate with soil characteristics are important in determining further limitations to agricultural land quality through wetness and droughtiness.
- 2.6.9 The influence of climate on soil wetness is assessed by reference to median FCDs (when the soil moisture deficit is zero), soil WC and topsoil texture. The ALC grade according to soil wetness is then determined by following the methodology set out in the ALC Guidelines⁸ and the information in Table 5.

²² Accumulated temperature is the excess of daily air temperatures above a selected threshold temperature (0°C), summed over a specified period (January to June) which is the critical growth period for most crops

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Table 5: ALC grade according to soil wetness – mineral soils

Wetness class	Texture of the top 25cm	Field Capacity Days				
		<126	126-150	151-175	176-225	>225
I	Sand (S) Loamy Sand (LS) Sandy Loam (SL) Sandy Silt Loam (SZL)	1	1	1	1	2
	Silty Loam (ZL) Medium Silty Clay Loam (MZCL) Medium Clay Loam (MCL) Sandy Clay Loam (SCL)	1	1	1	2	3a
	Heavy Silty Clay Loam (HZCL) Heavy Clay Loam (HCL)	2	2	2	3a	3b
	Sandy Clay (SC) Silty Clay (ZC) Clay (C)	3a (2)	3a (2)	3a	3b	3b
II	SLS SL SZL	1	1	1	2	3a
	ZL MZCL MCL SCL	2	2	2	3a	3b
	HZCL HCL	3a (2)	3a (2)	3a	3a	3b
	SC ZC C	3a (2)	3b (3a)	3b	3b	3b
III	SLS SL SZL	2	2	2	3a	3b
	ZL MZCL MCL SCL	3a (2)	3a (2)	3a	3a	3b
	HZCL HCL	3b (3a)	3b (3a)	3b	3b	4
	SC ZC C	3b (3a)	3b (3a)	3b	4	4
IV	SLS SL SZL	3a	3a	3a	3b	3b
	ZL MZCL MCL SCL	3b	3b	3b	3b	3b
	HZCL HCL	3b	3b	3b	4	4
	SC ZC C	3b	3b	3b	4	5
V	SLS SL SZL	4	4	4	4	4
	ZL MZCL MCL SCL	4	4	4	4	4
	HZCL HCL	4	4	4	4	4
	SC ZC C	4	4	4	5	5

Notes. From Table 6 of ALC Guidelines, October 1988⁸

For naturally calcareous soils with more than 1% calcium carbonate (CaCO₃) and between 18% and 50% clay in the top 25cm, the grade, where different from that of other soils, is shown in brackets;

Sand topsoil is not eligible for Grades 1,2 or 3a;

Loamy sand topsoil is not eligible for Grade 1.

2.6.10 Soil droughtiness is determined by comparing crop-adjusted available water (AP), with the moisture deficit (MD) for the locality for wheat and potatoes (MAFF ALC Guidelines, Appendix 4⁸). Grading of the land can be affected if the AP is insufficient to balance the MD and droughtiness occurs. The calculation used in the ALC Guidelines to determine the severity of this limitation is given below in Figure 3.

Figure 3: Methodology for calculating the severity of a droughtiness limitation to ALC grading

$$AP \text{ wheat (mm)} = \frac{TA_{vt} \times LT_t + \sum (TA_{vs} \times LT_{50}) + \sum (EA_{vs} \times LT_{50-120})}{10}$$

where
 TA_{vt} is Total available water (TA_v) for the topsoil texture
 TA_{vs} is Total available water (TA_v) for each subsoil layer
 EA_{vs} is Easily available water (EA_v) for each subsoil layer
 LT_t is thickness (cm) of topsoil layer
 LT₅₀ is thickness (cm) of each subsoil layer to 50 cm depth
 LT₅₀₋₁₂₀ is thickness (cm) of each subsoil layer between 50 and 120 cm depth
 Σ means 'sum of'.

$$AP \text{ potatoes (mm)} = \frac{TA_{vt} \times LT_t + \sum (TA_{vs} \times LT_{70})}{10}$$

where
 LT₇₀ is thickness (cm) of each subsoil layer to 70 cm depth

MB (Wheat) = AP (Wheat) - MD (Wheat)
MB (Potatoes) = AP (Potatoes) - MD (Potatoes)

Where
 MB is the Moisture Balance
 AP is the Crop-adjusted available water capacity
 MD is the moisture deficit, as determined by the agro-climatic assessment.

Grade according to droughtiness

Grade/ Subgrade	Moisture Balance limits (mm)		
	<i>wheat</i>		<i>potatoes</i>
1	+30	<i>and</i>	+10
2	+5	<i>and</i>	-10
3a	-20	<i>and</i>	-30
3b	-50	<i>and</i>	-55
4	<-50	<i>or</i>	<-55

Derived from MAFF, 1988⁸

Site limitations

- 2.6.11 The assessment of site limitations is primarily concerned with the way in which topography influences the use of agricultural machinery and hence the cropping potential of land. In addition, gradient influences the risk of soil erosion on cultivated land, particularly where the soil is weakly structured. Gradient and microrelief are limiting to agricultural land quality in the southern and northernmost parts of the area, with gradients of up to 10 degrees having been measured around Stone, resulting in a limitation to Subgrade 3b.
- 2.6.12 Flood risk is also potentially limiting to agricultural land quality, particularly around the Filly Brook and to the north of Stableford. The incidence and severity of flooding is difficult to ascertain as flood risk is determined by the extent, duration, frequency and timing of flooding events which may not have been recorded. However, any flood limitation is likely to be to Subgrade 3b.

Soil limitations

- 2.6.13 The main soil properties which affect the cropping potential and management requirements of land are texture, structure, depth, stoniness and chemical fertility. Together they influence the functions of soil and affect the water availability for crops, drainage, workability and trafficability. The main soil characteristics within the study area are:
- light loamy and sandy textures developed in glacial drift or sandstone which are mostly well drained;
 - loamy over clayey textures, commonly with poor subsoil structure and slow permeability; and
 - fine or coarse loamy textures, associated with water courses and variably affected by groundwater.
- 2.6.14 Soil depth and chemical limitations are not encountered in this study area.

Interactive limitations

- 2.6.15 The physical limitations which result from interactions between climate, the site and soil are soil wetness, droughtiness and erosion.
- 2.6.16 Light loamy and sandy soils of the Bridgnorth and Wick 1 associations are most affected by soil droughtiness. The severity of limitation is determined by factors such as topsoil texture, stone content and depth to the sandstone bedrock. As crop moisture deficits are moderate to moderately small, droughtiness limitations are mostly slight to Grade 2. These soils have been identified throughout the area in NSRI profile data, MAFF survey data and in field surveys undertaken for the purpose of this assessment.
- 2.6.17 The NSRI data identifies profiles of sandy loam, including topsoil of 26cm average thickness. The stone contents of the top- and subsoil horizons are variable, such that one profile to the south-west of Aston-by-Stone is limited by topsoil stone content to Subgrade 3a, whilst a second profile to the east of Swynnerton has little to no limitation and is of Grade 1.

- 2.6.18 Surveys undertaken by MAFF to the west of Walton¹³ and at Beech¹⁴ identify coarse loamy and sandy profiles which are limited by droughtiness to Grade 2. The survey at Beech also states some profiles are inherently of Grade 1 but downgraded on climate and also identifies similar profiles which are more severely limited by topsoil stone content, to Subgrade 3a.
- 2.6.19 Data derived from surveys undertaken to the east and north of Swynnerton for the purpose of this assessment further identifies this soil type. Similar profiles of sandy loam are present though with a much thicker topsoil layer, averaging 41cm. The profiles are slightly to moderately stony and limited by droughtiness to Grade 1 or 2.
- 2.6.20 Medium clay loam, sandy clay loam and loamy sand topsoil textures are also identified with an average thickness of 38cm. Coarse subsoil textures of sandy loam, loamy sand and medium sand are present, occasionally with slight mottling indicating inundation by groundwater. The profiles are predominantly of WC I, rarely of WC II, and the droughtiness limitation is between Grade 1 and Subgrade 3a, the latter being applicable mostly where the subsoil comprises sand.
- 2.6.21 The Delamere association is likely to have a more severe droughtiness limitation as profiles comprise loamy sand topsoils over sand, with sandstone at moderate depth. The limitation is likely to be to Grade 4, as reflected in the typical land use of heath and woodland, which may also be a direct result of its inherent acidity.
- 2.6.22 The presence of medium loamy over clayey textures of the Worcester, Whimble 3 and Clifton associations is also confirmed throughout the area in NSRI profiles and MAFF survey data. Surveys undertaken at the western periphery of Walton^{13,15,16} identify topsoils predominantly of medium clay loam with some sandy clay loams. Subsoil is consistently of sandy clay loam passing onto clay or heavy clay loam. Most of the profiles are of WC III which, under the climatic conditions of the area and with medium clay loam or sandy clay loam topsoils results in a wetness and workability limitation to Subgrade 3a.
- 2.6.23 Profiles of WC III with heavier loamy topsoil textures will be more severely affected and limited to Subgrade 3b, or with clayey topsoils would be of Grade 4. Clifton association soils of WC IV will be limited to Subgrade 3b with medium loamy topsoils, or Grade 4 with heavy loamy or clayey topsoil textures.
- 2.6.24 The Enborne and Wigton Moor associations are variably affected by groundwater, but typically of WC III or IV and will be limited as above. Wigton Moor soils may be less severely limited to Subgrade 3a if of WC III with coarse loamy topsoils.

¹³ MAFF (1993), *Agricultural Land Classification Walton MSA*, Stone, ref EL37/10152

¹⁴ MAFF (1991), *Land Classification and Soil Physical Characteristics Report for Land Covered by the Proposed Sand and Gravel Site at Beech*, 027/91

¹⁵ MAFF (1993), *Agricultural Land Classification for a Proposed Business Park, Redhouse Farm, Stone*, 547

¹⁶ MAFF (1997), *Stafford Local Plan Objection L00057/01 Land South of Eccleshall Road, Walton, Stone, Agricultural Land Classification*, 38/97 and 25/RPT/0662

3 Forestry

- 3.1.1 Assessment of forestry resources has primarily had regard to the National Forestry Inventory¹⁷ and its predecessor, the National Inventory of Woodland and Trees¹⁸, and to data collected from landowners and tenants in the farm impact assessments.
- 3.1.2 The area of woodland within a 4km wide corridor (2km either side of the route centre line of the Proposed Scheme) has been determined using GIS, and is shown in Table 6.
- 3.1.3 Woodland is quite extensive in this study area with over 14% woodland cover, compared to the national average of around 10%. The larger blocks of woodland in the area include Swynnerton Old Park and Maer Hills, with others including Clifford's Wood and Hatton Common. Closer to Swynnerton, woodland blocks include Birchwood, Cash's Pit, Stabhill Plantation, Closepit Plantation and Lodge Covert. There are no woodlands of note in the south of the Stone and Swynnerton area.
- 3.1.4 Much of the woodland associated with the Swynnerton Estate is managed, with the Forestry Commission managing the woodland at Swynnerton Old Park on a 900+-year lease.

Table 6: Area of woodland within the study area and construction boundary

	Area of woodland within 2km either side of centreline		Woodland permanently required	
	ha	%	ha	%
Ancient woodland	311.4	40	1.9	10
Broadleaved	259.7	34	9.9	55
Coniferous	154.4	20	0.0	0
Other	45.9	6	6.3	35
Total woodland	771.4	100	18.1	100
Woodland as % of total land within 2km either side of centreline		14.3		

¹⁷ Forestry Commission, National Forest Inventory, <https://www.forestry.gov.uk/inventory>

¹⁸ Forestry Commission, National Inventory of Woodland and Trees, <https://www.forestry.gov.uk/fr/infd-86xc6c>

4 Assessment of effects on holdings

4.1.1 The effects on holdings have been assessed according to the methodology set out in the Phase 2a Scope and Methodology Report (SMR) and the SMR Addendum which are set out in Volume 5: Appendix CT-001-001 and CT-001-002. A summary of the assessment is provided in Table 7. The nature of impacts considered comprises the temporary and permanent land required from the holding, the temporary and permanent severance of land, the permanent loss of key farm infrastructure and the imposition of disruptive effects (particularly noise and dust) on land uses and the holding's operations. These impacts occur primarily during the construction phase of the Proposed Scheme.

Table 7: Summary of assessment of effect on holdings

Holding reference, name and description	Temporary effects	Permanent effects
<p>CA3/1 New House Farm Staffordshire County Council (SCC) tenanted farm 50ha SCC tenanted farm augmented with 10ha owned locally to the south-east of the A34 Stafford Road/The Fillybrooks. SCC farm is the centre of the dairy operation with 90 dairy cows. Replacement heifers home-reared.</p>	<p>Land required: High 12.7ha; 25% of holding required for construction. Agricultural land required for construction of the Proposed Scheme and temporary stockpiles. Severance: Low. Land severed to the west of the Proposed Scheme – access will be maintained during the construction process. Disruptive effects: Low</p>	<p>Land required: Medium 5.7ha; 11% of holding required. Agricultural land required for the Proposed Scheme and mitigation planting and ponds. Severance: Low, land severed to the west of the Proposed Scheme – access available via Stone Rural Footpath 28 accommodation overbridge. Infrastructure: Negligible</p>
<p>CA3/2* Aston Hill Farm 29ha SCC tenanted farm</p>	<p>Land required: Negligible 0.1ha; <1% of holding required for construction. Agricultural land required for construction of the Proposed Scheme. Severance: Negligible Disruptive effects: Negligible</p>	<p>Land required: Negligible 0.1ha; <1% of holding required. Severance: Negligible Infrastructure: Negligible</p>
<p>CA3/3 Aston Pool Farm Owner-occupied 300ha dairy and arable farm. Main holding (Aston Pool) extends to 125ha augmented with 103ha at Norton Bridge and 33ha elsewhere. Aston Pool Farm has the dairy buildings – looking to expand herd from 300 to 450. Limited beef cattle; replacement heifers reared on the farm. All land entered into Entry Level Stewardship (ELS) scheme. Diversified activities include buildings let for commercial and residential uses; fishery let, on-farm shoot; waste storage and disposal.</p>	<p>Land required: Negligible 8.9ha; 3% of holding required for construction. Agricultural land required for construction of the Proposed Scheme in cutting, accommodation overbridge, temporary stockpiles and areas for mitigation. Severance: Low. Land severed to the west of the Proposed Scheme – access will be maintained during the construction process. Land affected is not used for grazing by the dairy cows and thus the impact of land loss and severance is reduced; the sensitivity to change of the land affected is reduced to Medium. Disruptive effects: Low</p>	<p>Land required: Negligible 4.7ha; 2% of holding required. Agricultural land required for the Proposed Scheme in cutting, accommodation overbridge, mitigation planting and ponds. Severance: Low, land severed to the west of the Proposed Scheme – access available via Stone Rural Footpath 28 accommodation overbridge. Infrastructure: Negligible</p>

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Holding reference, name and description	Temporary effects	Permanent effects
<p>CA3/4</p> <p>Pirehill Cottage Farm</p> <p>Owner-occupied</p> <p>40ha beef cattle and sheep holding managed with suckler cows and 150 ewes.</p> <p>Diversified activities include residential buildings let.</p>	<p>Land required: High</p> <p>8.0ha; 20% of holding required for construction.</p> <p>Agricultural land required for construction of the Proposed Scheme including haul roads.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Negligible</p>	<p>Land required: Medium</p> <p>5.3ha; 13% of holding required.</p> <p>Agricultural land required for the Proposed Scheme on embankment and mitigation planting.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>
<p>CA3/5</p> <p>North Pirehill Farm</p> <p>Owner-occupied</p> <p>225ha arable and beef cattle farm. Main holding (at Pirehill) extends to 112ha augmented with 112ha at Eccleshall. Approximately 700 head of cattle finished per annum.</p> <p>Diversified activities include residential buildings let, on-farm shoot; and telecommunications mast.</p>	<p>Land required: Medium</p> <p>27.8ha; 12% of holding required for construction.</p> <p>Agricultural land required for construction of the Proposed Scheme on embankment, accommodation overbridge, construction compound and temporary stockpiles.</p> <p>Severance: Low. Land severed to the west of the Proposed Scheme – access maintained during construction.</p> <p>Disruptive effects: Medium. Disruption during road realignment and travel between holdings.</p>	<p>Land required: Low</p> <p>16.0ha; 7% of holding required.</p> <p>Agricultural land required for the Proposed Scheme, the accommodation overbridge, balancing pond and areas for mitigation planting and ponds.</p> <p>Severance: Low. Land severed to the west of the Proposed Scheme – access available via Stone Rural Bridleway 0.1135 accommodation overbridge.</p> <p>Infrastructure: Negligible</p>
<p>CA3/6</p> <p>Walton House Farm</p> <p>Owner-occupied (farm rented under formal tenancy from family members).</p> <p>27ha equestrian and arable holding, all land entered into ELS scheme.</p> <p>Diversified activities include buildings let for commercial uses; DIY livery yard, solar farm and wind turbine.</p>	<p>Land required: High</p> <p>11.6ha; 43% of holding required for construction.</p> <p>Agricultural land required for construction of the Proposed Scheme in cutting, accommodation overbridge, temporary stockpiles and a haul road.</p> <p>Severance: Low. Land severed to the west of the Proposed Scheme – access maintained during construction.</p> <p>Disruptive effects: Medium. Holding engaged in equestrian use and construction noise and dust may cause disruption to horses.</p>	<p>Land required: High</p> <p>9.0ha; 33% of holding required.</p> <p>Agricultural land required for the Proposed Scheme, the accommodation overbridge, and areas for mitigation planting and ponds.</p> <p>Severance: Low. Land severed to the west of the Proposed Scheme – access available via Stone Rural Footpath 32 accommodation overbridge.</p> <p>Infrastructure: High. Demolition of farm buildings and solar farm.</p>
<p>CA3/7</p> <p>Walton Heath Farm</p> <p>Owner-occupied</p> <p>67ha dairy holding augmented with 10ha rented annually. Main holding 50ha augmented with 16ha at Norton Bridge. 160 dairy cows managed as a flying herd (all replacement heifers bought in). All land entered into ELS scheme.</p>	<p>Land required: High</p> <p>19.0ha; 28% of holding required for construction.</p> <p>Agricultural land required for construction of the Proposed Scheme in cutting, the Stone Infrastructure Maintenance Base-Rail (IMB-R) reception tracks and temporary stockpiles.</p> <p>Severance: High. Land severed to the west of the railhead; no access possible.</p> <p>Disruptive effects: Negligible</p>	<p>Land required: High</p> <p>14.9ha; 22% of holding required.</p> <p>Agricultural land required for the Proposed Scheme, the Stone IMB-R reception tracks and areas for mitigation planting and ponds.</p> <p>Severance: Medium. Land severed to the west of the Stone IMB-R; access available via public highway.</p> <p>Infrastructure: High. Although no buildings will be demolished the infrastructure (milking parlour, cow accommodation and slurry stores) will become redundant as dairy production will cease upon commencement of construction.</p>

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Holding reference, name and description	Temporary effects	Permanent effects
<p>CA3/8*</p> <p>Little Micklow Farm</p> <p>1ha residential unit with ancillary agricultural/equestrian use.</p>	<p>Land required: High</p> <p>0.4ha; 40% of holding required for construction.</p> <p>Agricultural land required for construction of the Proposed Scheme including the Stone IMB-R.</p> <p>Severance: Negligible</p> <p>Disruptive effects: High</p> <p>Issues arising from demolition of farmstead.</p>	<p>Land required: Negligible</p> <p><0.1ha; 3% of holding required.</p> <p>Severance: Negligible</p> <p>Infrastructure: High</p> <p>Demolition of farmstead required.</p>
<p>CA3/9*</p> <p>Land at Walton</p> <p>14ha permanent pasture</p>	<p>Land required: High</p> <p>2.9ha; 21% of holding required for construction.</p> <p>Agricultural land required for construction of the Stone IMB-R reception tracks and Norton Bridge to Stone rail sidings.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Negligible</p>	<p>Land required: High</p> <p>2.9ha; 21% of holding required.</p> <p>Agricultural land required for the Stone IMB-R reception tracks, Norton Bridge to Stone rail sidings and mitigation planting.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>
<p>CA3/10*</p> <p>Land north of Eccleshall Road</p> <p>17ha arable land</p>	<p>Land required: Negligible</p> <p>0.2ha; 1% of holding required for construction.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Negligible</p>	<p>Land required: Negligible</p> <p>0.0ha; 0% of holding required.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>
<p>CA3/11</p> <p>Micklow House Farm</p> <p>Owner-occupied</p> <p>332ha arable, beef cattle and sheep holding. Micklow House Farm extends to 67ha augmented with 90ha at Lea Farm, Eccleshall with a further 173ha owned locally. Calves bought-in and reared to finished weights; 500 sold per annum. 3,500 store lambs finished per annum.</p> <p>Diversified activities include private feedmill that was let to North-Western Farmers (NWF) but the company ceased renting the mill when HS2 was announced.</p>	<p>Land required: Medium</p> <p>34.3ha; 10% of holding required for construction.</p> <p>Agricultural land required for construction of the Proposed Scheme in shallow cutting, the Stone IMB-R, Norton Bridge to Stone rail sidings, temporary stockpiles and balancing ponds.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Medium</p> <p>Disruption during road realignments and travel between holdings.</p>	<p>Land required: Low</p> <p>26.4ha; 8% of holding required.</p> <p>Agricultural land required for the IMB-R, Norton Bridge to Stone rail sidings and mitigation planting, balancing ponds and areas for mitigation planting and ponds.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>
<p>CA3/12</p> <p>Pool House Farm</p> <p>Owner-occupied</p> <p>14ha permanent pasture grazed with beef cattle – approximately 25 sold per annum.</p> <p>Diversified activities include buildings let for commercial uses; agricultural and civil contracting.</p>	<p>Land required: High</p> <p>13.6ha; 100% of holding required for construction.</p> <p>Agricultural land required for construction of the Proposed Scheme including the Stone IMB-R.</p> <p>Severance: Negligible</p> <p>Disruptive effects: High. Issues arising from demolition of farmstead.</p>	<p>Land required: High</p> <p>13.6ha; 100% of holding required.</p> <p>Agricultural land required for the operation of the Proposed Scheme including the IMB-R and mitigation planting.</p> <p>Severance: Negligible</p> <p>Infrastructure: High. Demolition of farmstead required.</p>

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Holding reference, name and description	Temporary effects	Permanent effects
<p>CA3/13*</p> <p>The Paddock Home Farm</p> <p>9ha arable and grassland unit</p>	<p>Land required: Medium</p> <p>1.0ha; (12%) of holding required for construction.</p> <p>Agricultural land required for the realignment of Yarnfield Lane.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Negligible</p>	<p>Land required: Low</p> <p>0.5ha; 6% of holding required.</p> <p>Agricultural land required for the realignment of Yarnfield Lane.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>
<p>CA3/14*</p> <p>Land south of Yarnfield Lane overbridge</p> <p>1ha residential unit with ancillary agricultural/equestrian use.</p>	<p>Land required: High</p> <p>0.8ha; 81% of holding required for construction</p> <p>Agricultural land required for the realignment of Yarnfield Lane.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Negligible</p>	<p>Land required: High</p> <p>0.8ha; 81% of holding required.</p> <p>Agricultural land required for the realignment of Yarnfield Lane.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>
<p>CA3/15*</p> <p>Land south of Yarnfield Lane</p> <p>2ha grassland unit</p>	<p>Land required: High</p> <p>1.6ha; 100% of holding required for construction.</p> <p>Agricultural land required for the realignment of Yarnfield Lane.</p> <p>Severance: Negligible</p> <p>Disruptive effects: High. Issues arising from demolition of farmstead.</p>	<p>Land required: High</p> <p>1.6ha; 100% of holding required.</p> <p>Agricultural land required for the realignment of Yarnfield Lane.</p> <p>Severance: Negligible</p> <p>Infrastructure: High. Demolition of farmstead required.</p>
<p>CA3/16</p> <p>Darlaston Grange Farm</p> <p>Owner-occupied</p> <p>95ha arable unit managed under contract agreement. All land entered into ELS scheme.</p>	<p>Land required: High</p> <p>36.9ha; 39% of holding required for construction.</p> <p>Agricultural land required for construction of the Proposed Scheme including the Stone IMB-R.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Negligible</p>	<p>Land required: High</p> <p>25.9ha; 27% of holding required.</p> <p>Agricultural land required for the operation of the Proposed Scheme including the Stone IMB-R and mitigation planting.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>
<p>CA3/17*</p> <p>Whitemoor Farm</p> <p>14ha residential with equestrian</p>	<p>Land required: High</p> <p>6.2ha; 44% of holding required for construction.</p> <p>Agricultural land required for the realignment of Yarnfield Lane and the northbound access onto the M6.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Medium. Holding engaged in equestrian use and construction noise and dust may cause disruption.</p>	<p>Land required: High</p> <p>6.0ha; 43% of holding required.</p> <p>Agricultural land required for the realignment of Yarnfield Lane and mitigation planting.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>
<p>CA3/18*</p> <p>The Ashtons Farm</p> <p>5ha arable unit</p>	<p>Land required: High</p> <p>1.4ha; 29% of holding required for construction. Agricultural land required for mitigation planting.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Negligible</p>	<p>Land required: Medium</p> <p>0.8ha; 17% of holding required.</p> <p>Agricultural land required for mitigation planting.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>

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Holding reference, name and description	Temporary effects	Permanent effects
<p>CA3/19*</p> <p>Darlastonwood Farm</p> <p>95ha arable and grassland</p>	<p>Land required: High</p> <p>30.0ha; 32% of holding required for construction.</p> <p>Agricultural land required for construction of the Proposed Scheme including the Stone IMB-R.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Negligible</p>	<p>Land required: High</p> <p>20.3ha; 21% of land required.</p> <p>Agricultural land required for the operation of the Proposed Scheme including the Stone IMB-R, and mitigation planting.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>
<p>CA3/20</p> <p>Swynnerton Estate (925ha farmed in-hand)</p> <p>Owner-occupied (managed under contract) with arable crops, beef cattle and heifer rearing for contractors' dairy farm at Whitchurch. All the land managed under the ELS Scheme with HSL measures also included.</p> <p>Arable buildings located at Highlows Farm (to the south of the Estate; Buildings at Swynnerton Heath Farm and Harley Thorn Farm (both ex-dairy) used for cattle rearing.</p> <p>Extensive diversified activities including property rental, shoot, commercial storage and forestry.</p>	<p>Land required: Medium</p> <p>145.1ha; 16% (of land farmed in-hand) required for construction.</p> <p>Numerous, disparate areas of land required across some 6km for the construction of the Proposed Scheme including the northern abutment of the M6 Meaford viaduct and the Swynnerton south cutting.</p> <p>Severance: Low. The Estate is severed throughout its length but access will be maintained during the construction process.</p> <p>Disruptive effects: Medium. Disruption during road realignments and travel between holdings.</p>	<p>Land required: Medium</p> <p>101.6ha; 11% (of land farmed in-hand) required.</p> <p>Land required for the operation of the Proposed Scheme, various accommodation over- and underbridges and mitigation planting and ponds.</p> <p>Severance: Low. The Estate is severed throughout its length but access has been provided to severed land via:</p> <ul style="list-style-type: none"> * Swynnerton Footpath 27 accommodation underbridge; * Swynnerton Estate South underbridge; * Swynnerton Heath Farm overbridge; * Swynnerton Estate Central underbridge; * Swynnerton Estate North overbridge <p>Infrastructure: High. Demolition of a storage facility</p>
<p>CA3/21*</p> <p>Grange Farm</p> <p>(Swynnerton Estate tenanted farm)</p> <p>91ha arable and grassland. Land in HLS and ELS.</p>	<p>Land required: Negligible</p> <p>2.3ha; 3% of holding required for construction.</p> <p>Agricultural land required for overhead cable diversion and mitigation.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Negligible</p>	<p>Land required: Negligible</p> <p><0.1ha; <1% of holding required.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>
<p>CA3/22</p> <p>Sandyford Farm</p> <p>(Swynnerton Estate tenanted farm)</p> <p>146ha farm rented on Agricultural Holdings Act (AHA) tenancy. 230 dairy cows with all heifers reared for replacements or sold; bull calves sold within 6 months; arable cropping. All the land managed under the ELS Scheme.</p>	<p>Land required: High</p> <p>31.9ha; 22% of holding required for construction.</p> <p>Agricultural land required for the construction of the Proposed Scheme on shallow embankment, the Swynnerton New Bridleway 24 accommodation underbridge and mitigation.</p> <p>Severance: Low. Land severed to the west of the Proposed Scheme – access will be maintained during the construction process.</p> <p>Disruptive effects: Medium. Access to dairy paddocks will be disturbed during the construction period.</p>	<p>Land required: Medium</p> <p>20.0ha; 14% of holding required.</p> <p>Agricultural land required for the Proposed Scheme, the Swynnerton New Bridleway accommodation underbridge and mitigation planting and ponds.</p> <p>Severance: Low. Land severed to the west of the Proposed Scheme – access available via Swynnerton New Bridleway accommodation underbridge.</p> <p>Infrastructure: Negligible</p>

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Holding reference, name and description	Temporary effects	Permanent effects
<p>CA3/23</p> <p>Hatton Farm</p> <p>(Swynnerton Estate tenanted farm)</p> <p>121ha farm rented on AHA tenancy. Suckler cows and sheep on tack over winter. 65ha arable crops grown on contract by others; grassland also rented by others.</p> <p>Logging business also undertaken with logs bought in and processed.</p>	<p>Land required: Medium</p> <p>18.9ha; 16% of holding required for construction.</p> <p>Agricultural land required for the construction of the Proposed Scheme on shallow embankment, the Swynnerton Footpath 52 accommodation underbridge and mitigation.</p> <p>Severance: Low. Land severed to the east of the Proposed Scheme – access will be maintained during the construction process.</p> <p>Disruptive effects: Low</p>	<p>Land required: Low</p> <p>8.3ha; 7% of holding required.</p> <p>Agricultural land required for the Proposed Scheme, the Swynnerton Footpath 52 accommodation underbridge and mitigation planting and ponds.</p> <p>Severance: Low. Land severed to the east of the Proposed Scheme – access available via Swynnerton Footpath 52 accommodation underbridge.</p> <p>Infrastructure: Negligible</p>
<p>CA3/24</p> <p>Rowe Farm</p> <p>(Swynnerton Estate tenanted farm)</p> <p>198ha farm. 100ha rented on AHA tenancy with 40ha contract farmed for Swynnerton Estate; 57ha rented locally.</p> <p>330 dairy cows managed under New Zealand extensive management system. Bull calves sold within 7 days, heifers reared for replacements or sold.</p> <p>Commercial waste collection and spreading to land.</p>	<p>Land required: Low</p> <p>15.8ha; 8% of holding required for construction. Agricultural land required for the construction of the Proposed Scheme on shallow embankment, the Rowe Farm overbridge and mitigation.</p> <p>Severance: Low. Land severed to the east of the Proposed Scheme – access will be maintained during the construction process.</p> <p>Disruptive effects: Medium. New Zealand dairy management system relies upon access to grass. The Proposed Scheme will sever existing access tracks and there will be disturbance whilst new tracks are created from Rowe Farm overbridge.</p>	<p>Land required: Negligible</p> <p>4.9ha; 3% of holding required.</p> <p>Agricultural land required for the Proposed Scheme, the Rowe Farm overbridge, mitigation planting and ponds.</p> <p>Severance: Low. Land severed to the east of the Proposed Scheme – access available via Rowe Farm overbridge.</p> <p>Infrastructure: Low; existing access tracks will be severed and new tracks will be required from the Rowe Farm overbridge.</p>
<p>CA3/25*</p> <p>Land at Stableford</p> <p>5ha permanent grassland</p>	<p>Land required: High</p> <p>1.3ha; 26% of holding required for construction. Agricultural land required for the Dog Lane realignment.</p> <p>Severance: Negligible</p> <p>Disruptive effects: Negligible</p>	<p>Land required: High</p> <p>1.0ha; 20% of holding required. Agricultural land required for the Dog Lane realignment.</p> <p>Severance: Negligible</p> <p>Infrastructure: Negligible</p>
<p>CA3/26</p> <p>Shelton under Harley Farm</p> <p>(Swynnerton Estate tenanted farm)</p> <p>103ha at Shelton-under-Harley rented on AHA tenancy augmented with 40ha at Blakelow Farm and 28ha from Trentham Estate. 300 dairy cows with all heifers reared for replacements or sold; bull calves sold. All the land managed under the ELS Scheme.</p>	<p>Land required: High</p> <p>36.1ha; 22% of holding required for construction.</p> <p>Agricultural land required for the construction of the Proposed Scheme on shallow embankment, the realignment of Dog Lane and Bent Lane, the Swynnerton Footpath 10 accommodation underbridge, balancing ponds, and mitigation.</p> <p>Severance: Low. Land severed to the west of the Proposed Scheme – access maintained during construction.</p> <p>Disruptive effects: Medium</p>	<p>Land required: Low</p> <p>13.7ha; 8% of holding required.</p> <p>Agricultural land required for the Proposed Scheme, the realignment of Dog Lane and Bent Lane, the Swynnerton Footpath 10 accommodation underbridge, balancing ponds, mitigation planting and ponds.</p> <p>Severance: Low. Land severed to the west of the Proposed Scheme – access available via Swynnerton Footpath 10 underbridge.</p> <p>Infrastructure: Negligible</p>

* No Farm Impact Assessment interview conducted; data estimated.

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